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# Worldwide Report

TELECOMMUNICATIONS POLICY,  
RESEARCH AND DEVELOPMENT

No. 253

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17 December 1982

WORLDWIDE REPORT  
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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WORLDWIDE AFFAIRS

OBJECT OF EURECA PROGRAM: RECOVERABLE INSTRUMENT PLATFORM

Paris L'AERONAUTIQUE ET L'ASTRONAUTIQUE in French No 95, 1982 pp 37-39

[Article by Michel Bignier, director of space transportation systems for the European Space Agency: "Spacelab Program: The Future"]

[Excerpts] The fundamental objective of the EURECA [European Retrievable Carrier] program is the realization of an instrument platform that can be separated from the shuttle in orbit, operated as an independent satellite, retrieved with its payload, and reused. The success of the EURECA program will be measured in terms of the number of flights.

From the viewpoint of the user, the EURECA program will make available power levels (of the order of several kilowatts) and microgravity conditions (around  $10^{-5}$  g) impossible to obtain on Spacelab missions. Furthermore, the flight durations and available operating times for experiments far exceed those offered by Spacelab.

One of the prime purposes of the EURECA program is to satisfy the needs of European users. This is why, for the first flight, the ESA [European Space Agency] plans to send up a microgravity payload as the mission's principal payload on which the design will be based. For example, optimal conditions for an experiment in the processing of materials under microgravity conditions requires that residual gravity and its fluctuations be kept below a certain level during periods that may be of very long duration for the growing of large crystals. It is obvious that, from this standpoint, EURECA holds out a very substantial advantage over Spacelab. It appears certain that, although in the initial phase of research in microgravity (experiments "just to see what happens" in Spacelab) human intervention can be meaningful, the future development of materials-processing in space will take place by way of automated space stations, of which EURECA is the precursor.

The evolution of space activities toward automated and profitable industrial applications in the domain of materials-processing and the life sciences is going to require new technological solutions and methods.

Robotics and remote manipulation will have to be called upon to perform these functions efficiently and flexibly. EURECA offers interesting possibilities for testing and validating very quickly the critical technologies involved in future programs of this nature. EURECA can be used for rendezvous and docking tests, for the validation of robot systems (particularly: activation, detection, data transmission between satellites and ground stations, manned operations), and for the qualification of devices for the connecting up of interchangeable electrical equipment. In the realm of microgravity research experiments, EURECA will provide chambers for the processing of materials by means of a robot system that will feed the raw materials and manipulate the samples being processed.

It should be noted that EURECA's design is determined essentially by the type of payload it will carry and by its mode of operation. The payload determines the complexity of the services required in terms of electric power consumption, heat dissipation and type of thermal regulation, processing and storage of data, and remote command, control, pointing and aiming requirements. The planned principal payload, the microgravity payload, will determine EURECA's design because of its high power and low acceleration requirements. However, EURECA will also be available for scientific and technical experiments. The term "mode of operation" designates the manner in which it is planned to use EURECA: The type of orbit necessary, in that the orbit has an important bearing on telecommunications with the ground-based facilities; real-time data processing requirements on the part of ground facilities for the surveillance and control of the payload; and all operations necessary for proper operation of EURECA and its payload. In response to the requirements of its first mission, specifically oriented toward the processing of materials in space, EURECA's design is being targeted on the following performance objectives:

--Payload weight: On the order of 1,000 kg;

--Power delivered to payload: On the order of 2 kw;

--Residual acceleration in orbit:  $10^{-5}g$ ;

--Altitude: 500 km;

--Life in orbit: On the order of 4 months fully operational; at least 6 months between launching and retrieval.

EURECA will therefore supply its own energy (deployable and retractable solar panels), its own thermal regulation, stabilization, propulsion systems needed to attain its 500-km altitude and then to return to the orbit of the shuttle that is to retrieve it, data storage and transmission systems, and all the other systems necessary to the life of an independent and retrievable instrument platform. One of the important aspects that will govern the actualization of EURECA is to be the reuse of equipment already actualized, to put to good account the investments already made in Europe.

Present plans call for EURECA's first flight to take place by the end of 1986 or the beginning of 1987, and for the instrument platform to be equipped and ready for installation of its payload 1 year prior to its launching.

Never having as yet been done elsewhere in the world, the project is thus an ambitious one--though one whose developmental cost (of the order of 700 million francs) is relatively modest and will provide Europe with a unique space facility within the medium term--and a reusable one with a potential for specific applications of its own. In addition, EURECA will prepare Europe for the future phases in the development of automated space vehicles.

At a later stage, an operation of this kind could be planned for this module, but there is no evidence at this time that such a project, which would be a very costly one, can be justified by the scientific and technical results it could be expected to yield.

A more interesting project might be, to the extent they might be developed by others, the docking of platforms or modules to power unit platforms [PUP's] that would remain constantly in orbit and that would furnish energy to successive payloads docking up to it. It is doubtful, however, that a single free-flying module could be made to suffice for permanent human living in orbit, since it would be a matter of not only working within the module but also of living in it.

This is why sights must be set farther ahead on orbital stations, whether manned, automated, or capable of operating in both modes.

Europe's philosophy has not been defined in this domain, and the studies we are presently undertaking should enable us to discern the goals of European cooperation, its scientific and technical interest, the gaps in the domain that it could bridge, and to some extent, and assuming they will be determined in turn by an orbital-station policy, the programs to be developed during the 1985-1995 period. Should the Europeans hurl themselves into the manned-space battle, where strong positions have already been taken by the United States and the USSR? Should they play the automation and robotics field, less explored to date and open to interesting developments? Will the development of orbital stations be based essentially, indeed solely, on low orbits, or is interest likely to appear soon in orbital stations (particularly telecommunications stations) in geostationary orbit, probably manned, but which will have to be assembled in orbit, repaired and maintained using automated methods?

Should the Europeans pursue, as they did for Ariane, a policy of complete independence, which has been a highly successful one in the domain of launchers, or should they accept certain invitations, particularly from the United States to join American stations, wherein elements derived especially from Spacelab modules and equipment platforms could be used to excellent advantage?

Can Europe play on several game boards simultaneously, or must it absolutely make a choice?

Space applications to commercial ends are clearly the prime movers of development with regard to transportation systems; Ariane is a success because the market for which it is intended, that of telecommunications satellites, has proven to be in continued growth, and because Ariane was specifically designed to perform this type of mission. The prospects that have been generated by initial experiments in the fabrication and processing of materials in space, should they materialize, could markedly characterize the development of European transport systems, owing to the need to provide low-orbit transport facilities, and low-cost ones in this case, and to return the finished products to Earth. Low-orbit traffic could, in this case, equal or exceed geostationary-orbit demand. This possibility, which is difficult to evaluate today, could bear heavily on the design of the orbital transport systems of tomorrow. And in this case, the role of space stations appears predominant and human intervention essential, at least during the developmental phases of processing and manufacturing methods. Moreover, low-orbit transportation costs, human intervention capability and the returning of products to Earth under economically viable conditions could be the three determinative characteristics of the orbital transport systems Europe should count on for the long term. A space station, such as NASA has in mind for the space shuttle, is a coherent system that would enable the carrying out of these functions. Other solutions can be sought having more limited capacities but capable of gaining for Europe the autonomy that will be indispensable as commercial prospects materialize. Other intermediate courses also exist, which Europe must explore.

The extent to which the United States plans to open up the future space station program to international cooperation and the terms and conditions that must be met by the participants in any such program, as regards use of the station, will, of course, be important considerations in the choice the Europeans will have to make beyond Spacelab and Ariane.

Does the advent of the space shuttle not usher in services other than that of mere orbital transportation? Inspections and interventions in orbit, and, in short, orbital operations, could, in time, take on considerable importance. This is why the ESA is studying an orbital infrastructure design that could gradually provide Europe with facilities other than those of transport alone. Although the types of functions that could be provided by such an infrastructure can be foreseen, the degree of autonomy and the economic advantages of these systems have yet to be determined. From the technical standpoint, it is clear that programs such as EURECA must provide the basis of such an orbital infrastructure.

These questions concerning the European space transport systems of the future are highly important and very difficult ones. The choices involved cannot be made, at the risk of making grave, probably irreparable, mistakes, without having acquired a sufficient foothold in the technical and economic

domains. This is why Europe has decided to make a considerable effort in the domain of prospective studies, accompanied by certain Phase A studies. All approaches must be studied during the years 1982, 1983 and 1984, to bring to the policy decision a solid foundation on which a sound choice can be made. In any case, the know-how Europe and its industry have gained through the development of Ariane and Spacelab must be put to use to ensure our having a solid orbital infrastructure by 1995 that will permit us to address, in a fitting manner, the space missions of the 21st century.

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CSO: 5500/2516

WORLDWIDE AFFAIRS

SPOT IMAGE'S STOCKHOLDERS, SHARES LISTED

Paris L'AERONAUTIQUE ET L'ASTRONAUTIQUE in French No 95, 1982 pp 22

[Article by Gerard Brachet, chief executive officer of SPOT IMAGE: "Earth Observation: Development of Requirements and Systems."]

[Excerpts] The SPOT [Earth Observation Probe System] satellite will be launched in October 1984 by an Ariane rocket from the Kourou base. A description of this program was given in L'AERONAUTIQUE ET L'ASTRONAUTIQUE, No. 89. Besides the technological innovations to be offered by the satellite, and in view of the economic potentials being revealed, on the one hand, by the growing use of space data facilities in many sectors of activities and, on the other hand, by different market studies currently under way, France has decided to turn the distribution of the data over to a commercial firm that has been given the name SPOT IMAGE, a corporation capitalized at 25 million francs, shared by several French, Belgian and Swedish government bodies and industrial firms. SPOT IMAGE will be located at Toulouse, where the data receiving station will also be located.

SPOT IMAGE will perform the following technical functions:

--Reproduction of data coming from the CRIS [Space Image Rectification Center] (films and magnetic tapes);

--Manufacture of value-added products (products and services);

--File storage and commercial functions;

--Advertising;

--Reports to users;

--Market surveys;

--Marketing (distribution, sales).

SPOT IMAGE Stockholders:

CNES [National Center for Space Studies]	34	percent
BRGM [Bureau of Geological and Mining Exploration]	10	"
IFP [French Petroleum Institute]	10	"
IGN [National Geographic Institute]	10	"
MATRA [Mechanics, Aviation and Traction Company]	7.50	"
SEP [European Propulsion Company]	7.50	"
SSC [Swedish Space Corporation]	6	"
Participation Belge [Belgian Participation]	4	"
IRDI [Regional Industrial Development Institute]	1.20	"
Banque Nationale de Paris	1.20	"
Credit Lyonnais	1.20	"
Banque de Paris et des Pays-Bas	1.20	"
Societe Generale	1.20	"

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WORLDWIDE AFFAIRS

PAYLOAD OF ERS-1 TO INCLUDE HYPERFREQUENCY DETECTOR

Paris L'AERONAUTIQUE ET L'ASTRONAUTIQUE in French No 95, 1982 p 24

[Article by Gerard Brachet, chief executive officer of SPOT IMAGE: "Earth Observation: Development of Requirements and Systems"]

[Excerpt] ERS-1

On 15 May 1982, the ESA's [European Space Agency's] ERS-1 program entered its system definition phase (Phase B). The final equipment actualization phase (Phase C/D) will begin around year-end 1983.

The principal objective of the ERS-1 program is to provide Europe with the capability to participate in the management of Earth's resources and in the surveillance of its environment. In particular, the program is designed to process, develop and exploit applications of remote-sensing data in the coastal, oceanic and glacial zones.

The satellite's nominal payload includes:

--An active hyperfrequency detector (AMI [expansion unknown]) combining the functions of an SAR [synthetic-aperture radar], a "waves" diffusiometer, and a "winds" diffusiometer, and designed to measure wind fields and the waves spectrum, as well as to do all-weather imaging over coastal zones, oceans, ice formations, and emergent land elements;

--An RA [radar altimeter] to measure the significant height of waves and to furnish quantitative data on ice formations and major oceanic currents;

--Laser retroreflectors for precision ground-based tracking;

--Ground-trace scanning radiometer (ATSR [expansion unknown]). This is a 3-channel infrared radiometer for precision measurements of ocean-surface temperatures;

This payload will be space-borne by a platform whose design is based on another model of the multiple-mission platform developed under the French SPOT [Earth Observation Probe System] program.

ERS-1 will provide a worldwide coverage compatible with the operating cycles of the instruments in its payload. To this effect, it will be able, on the one hand, to communicate directly with ground stations and, on the other hand, to record on-board the data it gathers from any part of the world, except insofar as concerns the SAR, which, because of its high data bit rate, will be limited to real-time transmissions. The ground segment will be organized so that certain ERS-1 data can be processed and delivered in quasi-real time (3 to 6 hours) to those users interested in the monitoring of rapidly evolving dynamic phenomena.

The scientific results expected from this mission will be of utmost interest to researchers in the fields of physical oceanography, glaciology and climatology. The mission should also bring about an improvement in short- and medium-range forecasting of meteorological conditions and of oceanic conditions, interest in which is of paramount importance not only from the stand-point of maritime transport activity but also from that of the planning and operation of sea-based industrial complexes and particularly offshore oil drilling platforms. Surveillance of floating ice formations and icebergs will contribute also to increasing the safety of maritime transportation and of offshore oil production activities in the far northern latitudes.

ERS-1 is slated to be put into a circular sun-synchronous orbit at an altitude of around 700 km, by Ariane 2 or 3, around year-end 1987. The estimated life of the satellite is 3 years.

ERS-1 will be at one and the same time an experimental and preoperational system, the ultimate purpose of which will be to pave the way for a fully operational multi-satellite system in the 1990's.

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WORLDWIDE AFFAIRS

EUROPEAN PROSPECTS FOR LAUNCHER PROPULSION DEVELOPMENT

Paris L'AERONAUTIQUE ET L'ASTRONAUTIQUE in French No 95, 1982 pp 74-75

[Article by Jean Dardare, technical director for the European Propulsion Company: "Prospects in the Field of Launcher Propulsion"]

[Excerpts] European Prospects

In Europe, France supports approximately two-thirds of the launcher propulsion developmental effort. Our financial resources are obviously much more limited than those of the United States and our technological level less advanced. Ariane's two engines, the Viking and the HM7, whose designs date back to 1966 and 1962 respectively, will be the only ones available until and including Ariane 4, and will still be used for Ariane 5, whose first flight is being targeted for 1992 and hence will probably take place about the year 2000.

For its primary mission--15 tons of payload in low orbit--Ariane 5, a two-stage rocket, will use the first stage of Ariane 4 and a new second stage, a cryogenic one propelled by a liquid-oxygen-liquid-hydrogen engine having a thrust of 90 tons in a vacuum, which has been baptized the HM60. Its combustion pressure will be relatively high, 100 bars; its specific impulse in a vacuum, 445 seconds. It will operate in accordance with the conventional gas generator cycle, and will be designed to provide 6,000 seconds of operation and 50 starts. Its development will commence in 1984 after a 3-year technological program, and be completed upon qualification by the end of 1991. Its characteristics have been chosen on a rather conservative basis, particularly its cycle, so as to limit cost and duration of development but also, and above all, relative contingencies.

For transfer to geostationary orbit, which, in the case of Ariane 5, can be accomplished by a third stage, the HM7 will have to be improved, making possible its refiring, and increasing its operational life, its reliability and its performance parameters.

The next phase, being targeted toward the end of the 1990's, is harder to define without knowing the missions it will be expected to accomplish. It is possible, however, to imagine a retrievable and reusable vehicle, at

least as regards its first stage, by way of soft landing if possible, undoubtedly capable of being manned, at least for low-orbit launchings, and having a low-orbit payload capacity of 30 to 50 tons.

The HM60 will evidently be used for the second stage and the improved HM7 for orbit transfer. Remaining then will be the problem of propulsion of the first stage. The Viking will have to be abandoned, being, as it will be by then, of outdated technology, and of inadequate thrust and performance parameters. Two solutions will then be available: Either use a new liquid-oxygen-hydrocarbon engine that will have to be developed, or use a version of the HM60 adapted to this use and with augmented thrust. The choice between these two solutions will have to be the result of a detailed economic study that will require knowledge of the missions; the outcome of this study may be different from that of the studies carried out in the United States, taking into account smaller annual payload totals. If the choice calls for the first stage to be oxygen-hydrogen propelled, a solution that would have the advantage of not requiring the development of an entirely new engine, it will undoubtedly be found that the present choice of the HM60, and especially its cycle, was not the best. A stepped combustion cycle would have given it a much greater thrust augmentation potential with much better performance parameters, particularly on the ground.

It would seem, in view of our present technological level and available means, that any thought of preparing to develop a single-stage launcher in the period being considered must be excluded, and hence that it is useless to weigh the merits of a dual-fuel engine.

The foregoing considerations bear out that the present choice of the HM60 engine cycle is justified by the available technological level in Europe, the result of the absence of a technologies research and development program during the development of Ariane 1, but also that this choice can very heavily penalize the future of this engine, by limiting, as it does, the performance parameters, flexibility of use and thrust augmentation potential that, unfortunately, are so highly desirable in the current uncertainty as to future missions to be provided for. The lesson to be drawn from this is the absolute necessity of implementing, concurrently with the development of engines, research and development programs on technologies, with the aim of constantly improving basic knowledge and current technologies, for use in future generations of engines. This is a profitable investment since, without it, the technological gap will widen, bringing about an unfavorable situation from the standpoint of competitiveness, lengthening the time needed for the development of new engines and making it more costly. The Americans, for example, attribute the delays and the costly malfunctions experienced in the developmental program on the shuttle's main engine to the fact that, to gain time, the overall engine system project was implemented before completion of the research and development programs on the pumps, turbines and other principal components. This explanation is fully corroborated by our own experience in developing the HM60 engine and the third stage of Ariane.

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BRIEFS

CHITTAGONG PHONE EXCHANGES--Chittagong Nov 9--The Telephones and Telegraphs Department have set up two new telephone exchanges and improved nine other existing exchanges at upgraded thana headquarters under Chittagong Telecommunications Region. According to Chittagong telecommunication region office these exchanges one each at eleven upgraded thanas have gone into functioning from Sunday. The exchanges are in Chittagong Chittagong Hill tracts Bandarban Sylhet Noakhah and Comilla districts. The new exchanges set up at upgraded Langdu thana of Chittagong Hill tracts and at Balagon of Sylhet district have the capacity of 30 lines each. In Chittagong district the capacity of Sandwip exchange increased to 100 lines from 30 lines Fatiksari exchange to 50 lines from 30 and Chokoria exchange to 70 lines from 50. The exchange at upgraded Naikhongsari thana of Bandarban district raised to 50 lines from ten lines. Similarly Sonagazi exchange of Noakhali district is being added with 40 new lines raising the capacity to 70. In Comilla district the capacity of Matlabgonj exchange increased to 70 lines from 30 and Sarail exchange to 30 lines from 16. Gopalgonj and Chhatak exchanges of Sylhet district have now the capacity of 50 lines and 200 lines respectively. [Text] [Dhaka THE BANGLADESH OBSERVER in English 10 Nov 82 p 7]

CSO: 5500/7039

ARGENTINA

BRIEFS

NEW SATELLITE GROUND STATION--The general manager of the National Telecommunications Company has reported that the new satellite ground station at Bosque Alegre, Cordoba Province, will start operations during the first 3 months of 1983. He said the Bosque Alegre station will be used for international communications for Cordoba and other northern Argentine cities and that it will reduce traffic through the Balcarce plant. [PY280236 Buenos Aires Domestic Service in Spanish 1030 GMT 24 Nov 82]

TV CHANNEL CONCESSION--The Empresa Vizental and Associates has been granted a concession to install a television channel in Parana. [PY280236 Buenos Aires DYN in Spanish 1738 GMT 11 Nov 82]

RADIO STATION CONCESSION--The Empresa Radiodifusora Nordeste has been granted a concession for a radio station to be installed in the city of Resistencia. The station will have 25 kw and broadcast on 101.5 mHz. [PY280236 Buenos Aires TELAM in Spanish 1530 GMT 18 Nov 82]

TV, RADIO STATION LICENSES--The executive branch has approved an operation license for LV 85-TV channel 6 in San Rafael, Mendoza and has renewed licenses for LW8 Radio San Salvador of Jujuy and LW80-TV channel 7 in the capital of Jujuy. [PY280236 Buenos Aires TELAM in Spanish 1325 GMT 2 Dec 82]

RADIO LICENSES RENEWED--President Bignone has renewed licenses for 15 years to the following radio stations: LT22 Pehuajo Radio Nueva Era; LT27 Villaguay Radio La Voz del Montiel; LT29 Venado Tuerto Radio Venado Tuerto; LT37 Rufino Emisora Rufino; LT39 Victoria, Entre Rios, Emisora Victoria; LT40 La Paz, Entre Rios, Radio la Voz de las Paz; LT41 Gualeguaychu Radio la Voz del Sur Entreriano; LU10 Azul Radio Azul; LU16 Villa Regina Radio Rio Negro; and LW8 Libertador General San Martin, Jujuy, Radio Libertador General San Martin; and for 20 years the following radion stations: LU12 Rio Gallegos Radio Rio Gallegos, LU17 Puerto Madryn Radio Golfo Nuevo and LW4 San Ramon de la Nueva Oran, Salta, Radio Oran. (PY280236 Buenos Aires DYN in Spanish 1540 GMT 2 Dec 82)

CSO: 5500/2020

FRENCH AID TO ENABLE CONSTRUCTION OF EXCHANGES IN NORTH

Port Louis LE MAURICIEN in French 30 Oct 82 pp 1, 4

[Text] A delegation of the National Economic Cooperation Fund (CCCE) and the Mauritian Government will sign on Tuesday an agreement for Fr30 million in aid to install exchanges to improve telephone communications in the north of the island. Since the aid had already been approved in principle by the National Fund, the government has only been waiting for the signing. Bids will be solicited for the civil engineering work. In view of its high cost, the project will be carried out in two phases.

The first phase will cover telephone service between Port-Louis and Cap Malheureux, which includes the areas of Triolet, Grand Baie, Choisy and Pereybere. The microwave infrastructure installed in the north last year will help considerably in improving the quality of communications with that part of the island. Work will get underway at the beginning of next year and last 18 months.

This project, which will be the responsibility of SOFRECOM, a French semi-governmental organization, is separate from the regular work done by the telecommunications service which installs about 2,000 new lines a year. Since development in the outlying areas is proceeding fairly rapidly, the telecommunications service is already planning construction of an additional exchange at Port-Louis/North, alongside the Plaine Verte, with a capacity of 10,000 lines in case the new exchanges to be constructed next year reach capacity sooner than expected. This second phase will coincide with increasing capacity of the Rose-Hill and Floreal exchanges, each with 5,000 additional lines.

The Aid and Cooperation Fund (FAC) has agreed to help train Mauritian staff and technicians. Three inspectors of the telecommunications service who have undergone a period of training in France have returned in anticipation of the SOFRECOM project. FAC will also send three experts to train on the spot additional Mauritians to oversee smooth operation of the new exchanges.

The exchanges in the north will be equipped with French equipment of the E-10 trademark produced by the French company CIT-ALCATEL. This equipment is among the best in Europe. The system to be used in the exchanges is called a "temporal system" and is among the most sophisticated in the world.

It makes it possible to code the voice into impulses, preventing anyone along the route from understanding an intercepted telephone conversation. This is the system currently used between Mauritius and Europe. The purpose in turning to such sophisticated systems is that telecommunications advances are made so quickly that old systems become obsolete and are abandoned. The electro-mechanical system used in Mauritius until recently has been dropped completely in developed countries.

It is expected that these projects soon to be started will make it possible in 4 years to eliminate the long waiting list of applicants for service. Thus, major investment is necessary so the telecommunications service can make up for the delay accumulated over the past few years.

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MOZAMBIQUE

BRIEFS

NEW AUTOMATIC EXCHANGE--Beira--A new automatic telephone exchange, with 100 inside and 10 outside lines, was recently acquired by Acucareira do Buzi from Central Automatica Portuguesa, at a cost of about 1,200 contos. The modern telephone system was acquired, on one hand, because of the inadequacy of the old system, which had 50 inside lines, and also because of the size of the company, which encompasses a whole agroindustrial complex and a residential village. Putting the new equipment in place required construction of a building, annexed to the company offices, as well as installation of the respective telephones, which were installed by specialists of the firm from which the system was purchased, with the assistance of workers in this important strategic production unit. Acacio Correia, chief of the electrical department told DIARIO DE MOCAMBIQUE that one of the noteworthy advantages of the equipment is the possibility of direct calls to the city of Beira and from there to every part of the country and the world. Four individuals can make simultaneous calls from Buzi to Beira and vice versa. The exchange is functioning only within the complex, pending acquisition of two radio transmitters to be set up in Beira and in Buzi, through which outside calls will be possible. "The entire line is laid underground, and we feel we will not have any major problems in this area for 10 years, approximately," Correia assured. Meanwhile a technical-professional training course in basic electricity ended about 2 weeks ago. Company employees attended the course, which was taught by more experienced professionals. [Text] [Beira DIARIO DE MOCAMBIQUE in Portuguese 21 Oct 82 p 3] 6362

CSO: 5500/43

SOUTH AFRICA

BRIEFS

TELEVISION CHANNELS TO SPLIT--The public relations department of the SABC [South African Broadcasting Corporation] announced yesterday that TV-2 and TV-3, which presently share the same channel, would each be given its own channel beginning on 31 December at 2130. TV-2 will serve Cape Town, Port Elizabeth, East London, Durban, the Maritzburg area, Glencoe, Davel, Middleburg, Johannesburg and Pretoria. TV-3 will serve Bloemfontein Kimberley, Theunissen, Kroonstad, Hartbeesfontein, Welverdiend and Potgietersrus as well as Johannesburg and Pretoria. [MB070949 Johannesburg THE CITIZEN in English 3 Dec 82 p 1]

CSO: 5500/59

SWAZILAND

BRIEFS

SBS-2--Broadcasting Service is busily preparing for its second channel--SBS-2--set to begin broadcasting early next year. Director of SBS Mr J.B.S. Vilakati, said yesterday the construction of the new station at Sidvokodvo was nearing completion. Mr Vilakati said SBS-2 which will broadcast in siSwati, will have one big station and no booster stations. SBS-1 has six booster stations. Mr Vilakati said new equipment from the United States had arrived in Durban and are to be transported to Sidvokodvo to be stored until the building is completed. SBS's chief engineer Mr Sydney Black recently returned from the United States where he tested and purchased equipment for the new station. The new equipment which has arrived in Durban includes insulators. "Most of the equipment which will be needed for the station has already been purchased," Mr Vilakati said. SBS-1 will broadcast in English and will give more time to schools and other educational programmes. "However, broadcasting in two channels and two languages will not be easy in view of the current lack of skilled manpower," Mr Vilakati said. This will involve an intensive on-the-job training programme," he said. "Building may be easy, but it may not be so easy to find suitable personnel," he said, SBS currently covers about 90 percent of the country. However, in some areas, such as Nyamane and Makhosini, SBS broadcasts are not heard very clearly. Mr Vilakati said there is an ongoing survey to identify all the areas where SBS broadcasts are not clear with a view to improving the situation. "In areas where our transmission is not clear we will install low transmitters," Mr Vilakati said. SBS-2 will concentrate on siSwati cultural programmes. These will include siSwati music, literature and traditional story telling. [Text] [Mbabane THE TIMES OF SWAZILAND in English 12 Nov 82 pp 1, 20]

CSO: 5500/53

INTERNATIONAL AFFAIRS

JOINING ECS PROJECT SEEN SPEEDING UP A NORDIC TV SATELLITE

Norway Expresses Interest

Stockholm DAGENS NYHETER in Swedish 2 Nov 82 p 16

Article by Anders Mellbourn: "Satellite Could Result in Cable TV"

Text The development of cable television in Sweden as well as the future co-operation on a Nordic TV satellite would be speeded up if the Nordic countries were to join the ECS project.

The Telecommunications Agency in Sweden recently informed the Ministry of Education about the Norwegian initiatives for accelerated Nordic TV cooperation on the European Communication Satellite, ECS. But no direct comments are as yet to be had from official circles in Sweden.

In its Tuesday issue (2 Nov) DAGENS NYHETER was able to report that in the satellite group of the Nordic Cultural Secretariat Norway presented the idea of a Nordic channel on the ECS, which according to plans is to be launched and in operation as early as next fall.

The Swedish authorities involved are extremely reticent and emphasize that everything is still very unclear.

Ministerial Meeting

But representatives of the Swedish Telecommunications Agency participate continuously in the European satellite discussions. And according to what DAGENS NYHETER has learned, the project should be included on the agenda when the Nordic ministers of culture next meet on 15 November.

At the same time plans for Tele-X and the Nordsat projects are continuing. The Swedish Ministry of Industry and the Space Corporation are pressuring the Norwegians in order to obtain Norwegian agreement to Tele-X. So far only Sweden has committed itself to Tele-X, but Finland as well has contributed money for the development. If Norway says yes, Finland is also likely to participate fully.

Nordic participation in the ECS project would be interesting primarily from two points of view.

First, it could become an initial phase for Tele-X and later on for Nordsat. Since ECS is expected to function as early as next fall, work on the program could get under way considerably earlier than 1985-86, when Tele-X is to be launched.

Second, the ECS would probably speed up cable television tests in Sweden. The ECS requires special, powerful receivers which in practice exist only for the cable television networks. The cable TV experiments which will be made next year in Lund are based on the ability to receive three foreign television programs, from Denmark, the FRG and the GDR. With the ECS the number of programs would grow to nearly 10, and tests could be made all over the country.

#### Could Affect Sweden's Tele-X, Nordsat

Stockholm DAGENS NYHETER in Swedish 4 Nov 82 p 20

#### Article by Bjorn Lindahl: "Satellite in 1 Year"

Text Oslo, Monday--A dozen European television channels and one Nordic channel, that is what television viewers in the Nordic countries could be offered as early as next fall, if a Norwegian initiative goes through. The Norwegian Telecommunications Agency has expressed interest in participating in a European telecommunications satellite, ECS, which will be launched with a French rocket and which has a number of television channels for lease.

The satellite is of a different type than the one in question when Nordsat was discussed. It is not possible for a single household to receive the programs with a simple parabolic antenna, but bigger receivers are required.

If the number of cable television networks and the households which are connected to central antennas are calculated, however, it would be possible to reach 60 percent of the households in the Nordic countries, according to estimates.

The Norwegian Telecommunications Agency, together with a large number of commercial enterprises, has shown an interest in the satellite.

"Norway has presented the idea of a Nordic channel to the satellite group of the Nordic Cultural Secretariat in Copenhagen, but the Norwegian Telecommunications Agency still has not committed itself to participating in the satellite project," says Kare Solbakken at the Norwegian Telecommunications directorate.

#### Encouraged

Norway was the country which most strongly encouraged the Nordsat project. Since the Conservative Party came to power some of the households have also been granted the license to receive broadcasts from a British television company via the so-called OTS Expansion unknown satellite.

But in Denmark as well attitudes are changing at the same rate as the non-socialist parties are beginning to feel at home in the ministries. A change in legislation is in the making, so that Danes may also view British satellite television.

The ECS satellite will have a lifetime of 7 years, and the cost of leasing a channel would be about 10 million kronor.

11949  
CSO: 5500/2539

DENMARK

DANISH TV TEXT TRANSMISSION BEGINNING IN MARCH 1983

Copenhagen BERLINGSKE TIDENDE in Danish 6 Nov 82 p 7

[Article by LI-Z: "Danish TV to Be Captioned as of March"]

[Text] On 1 March Danish television will take a small step in the direction of people's being able to decide themselves whether they will have captioned TV broadcasts. In the first round it is a question of broadcasting captioned TV in two weekly broadcasts of 30 to 40 minutes. In addition to this 60 "pages" of information will be broadcast with news, weather forecasts and program summaries which people can themselves tune into at any time during the entire broadcast time.

1500 to 200 [as published] Kroner More

Radio Denmark has run captioned TV tests since the end of 1977 and had excellent results. However it can be difficult to receive captioned TV in inner Copenhagen because of ghosts from high buildings. The test broadcasts were transmitted by means of old equipment, but in January Radio Denmark will receive new equipment which will be ready to put into service by March 1983.

It is not possible to receive captioned TV just like that. The TV set must be furnished with a so-called decoder which costs something under 2000 kroner. But this decoder can be installed only in TV sets which have been made ready for captioned TV in advance at the factory. Prepared sets of this sort have been on the market the last couple of years. Now it is also possible to buy sets which have been furnished at the factory with a built-in decoder. A set of this sort is about 1500 kroner more expensive than a set without a built-in decoder.

Old sets which have not been prepared for captioned TV will be quite ridiculously expensive to convert for reception of captioned TV.

So for the time being it can be said that captioned TV is only for those specially interested.

Everything Captioned in Four Years

Over the next four years Radio Denmark hopes to reach the point where all of its own productions which are not direct are supplied with captions for the benefit of the hearing impaired.

Others can simply do without converting to captioned TV and avoid being distracted by captions at the bottom of the picture.

8985

CSO: 5500/2542

COMMERCIAL SATELLITE TV SEEN ECONOMICALLY FEASIBLE BY 1986

Copenhagen BERLINGSKE TIDENDE in Danish 6 Nov 82 p 3

[Article by Møl.: "Danish Television from Satellite in '86"]

[Text] "The legal and technical possibilities for Denmark's getting an advertising-financed TV satellite channel have been studied and are in order. This will be able to take place in 1986-87. The economic basis for such a program is to be studied by the Danish Advertisers Association and the Danish Advertising Bureaus Trade Association. This is occurring now through market research," says cand. jur. [Bachelor of Laws] Anders Torbøl, who has taken the initiative for Denmark to have satellite TV.

He is vice-general-secretary of the conservative group in the European Parliament and has, among other things, negotiated with Radio Luxembourg regarding Denmark's getting a channel in the satellite Radio Luxembourg will send up in 1986.

This satellite will be able to cover all of Denmark and southern Sweden and, by means of a strong parabolic reflector set up in Oslo, southern Norway also. For this reason Anders Torbøl believes that there can perhaps be a basis for an advertising-financed "Nordsat" [Scandinavian satellite].

Director Werner Mætenson of the Danish Advertisers Association reports that on Monday a meeting will be held in a work group in which division of the market research work assignments will be delegated out.

A study program has been received from Radio Luxembourg, which Radio Luxembourg has used in other countries when a study is to be made in a country of the demand and economics.

The idea is to find out how many have TV, how long people watch television, how much cable TV there is, how many common antennas exist and how many foreign programs can be seen. In addition, it must be known how much advertising money is to be used. The latest study has shown that in Denmark it is a question of 4 billion kroner per year.

Director Børge O. Madsen of the Danish Advertising Bureaus Trade Association says that his association will prefer a purely Danish advertising-financed TV 2 [Channel 2]. Secondarily, a satellite program in Danish with commercials controlled by Danes.

"We are in a situation in which a number of TV satellites are being sent up and if we do not react ourselves we risk that there will be a number of international satellite services which come to dominate and thereby pull the advertising kroner from Denmark to centers in Geneva, London and New York."

"On the other hand there is also nothing preventing a Danish advertising-financed TV 2's being able to broadcast besides a Danish-controlled Luxembourg channel, for example. Therefore, we went along with this project," says Børge O. Madsen. "Who will then come in and manage we must find out when the studies and negotiations in Luxembourg regarding a Danish channel have come a little further along," he says and points out that the interested parties could be the Danish Dailies Association and the Danish Magazine Publishers Association.

8985  
CSO: 5500/2542

FRANCE

PTT MINISTER URGES TECHNOLOGY TRANSFER AT ITU MEETING

Paris ELECTRONIQUE ACTUALITES in French 15 Oct 82 pp 1, 8

[Article by D. Levy]

[Text] Nairobi. The first part of the conference of ministers of the ITU [International Telecommunications Union], which will continue in Nairobi, Kenya, until 5 November, included the election of Mr Butler of Australia to the post of secretary general of the ITU, replacing Mr Mili. Mr Mexandeau, the minister of the French PTT [Postal and Telecommunications Service], and the leader of a large French delegation, gave a speech to the conference on 6 October, in which he pointed out the contributions made by France to international cooperation in the field of telecommunications, "both within the multilateral context of the ITU and in the framework of bilateral actions." He added, though, that "assistance programs and multilateral cooperation must not lead us to forget the fundamental activity of standardization."

Attracted by the conference, which has brought together nearly 1,000 delegates representing 147 member nations of the ITU, the major French telecommunications industries, along with their foreign counterparts, have come to Nairobi to take advantage of the presence of PTT officials from all over the world.

The conference of ministers is the supreme authority of the ITU. It establishes the general principles to be followed by the ITU in order to "maintain and extend international cooperation for the improvement and rational use of telecommunications of all sorts and to favor the development of technical resources and their most effective use in order to improve the efficiency of telecommunications services, to increase their use, and provide the public with greater access to such services," states the report of the administrative council, while listing the activities of all the organizations of the ITU since the last

conference of ministers was held in 1973. The conference also prepares the foundations for the ITU's budget and sets the ceiling for spending until the next conference, in addition to conducting elections.

After the committee work which is going on now, resolutions will be submitted in plenary sessions during the last week of the conference. However, outside of any possible directives which might lead indirectly to telecommunications programs, the major interest in this conference for industry lies in the contacts which can be made with PTT officials from all over the world who are meeting in Nairobi.

#### Mr Butler's Election

The Nairobi conference began in a strained atmosphere, somewhat reminiscent of a U.N. General Assembly session. (The ITU is the UN's specialized institution for telecommunications). The tension was caused by the intrigues surrounding the election of the new secretary general, and by an attempt to bring politics into the organization. Right away an Algerian resolution was introduced calling for the expulsion of Israel from the ITU. The United States, followed by the EEC members, then threatened to withdraw from the organization, and the Africans became incensed about seeing "their" conference being sabotaged. (This is the first time that the ITU's conference of ministers has met in Africa). The Algerian delegate then agreed to have his resolution debated "later."

After that, some observers wondered about the possibility of a split in the ITU. Others commented that no matter what happened, such an international organization is essential, if only to handle frequency allocations.

The election of the secretary general quickly became a duel between Messrs Mili, the present secretary general, and Butler, now vice secretary general. Mr Butler, who was supported by France, won in the second round of balloting by 74 votes (of 131 cast). Mr Mili's defeat was caused, according to most of the observers, by the fact that he had been in office so long. He was elected secretary general in 1973, but had actually been doing the job since 1967. Mr Jipguep of Cameroon was elected vice secretary general of the ITU.

The other major event of the first part of the Nairobi Conference was Mr Mexandeau's 6 October speech. After speaking of the considerable development of telephone service in

France (with an increase from 4 million lines in 1970 to nearly 20 million in 1982) and the use of new technology (such as time-switching, digital transmission, computer communications, the use of optical fibers) the PTT minister said that "France is one of the world's biggest supporters of international cooperation, both within the ITU and in a bilateral context as well." He pointed out that the number of telecommunications specialists sent on missions abroad increased from 480 in 1981 to over 500 in 1982 (of these, 99 were on ITU missions). This number will probably reach 600 in 1983. In addition, France took in nearly 600 foreign trainees in 1981 (99 came as part of an ITU program).

### Standardization Comes First

However, Mr Mexandeau emphasized that "technical assistance and multilateral cooperation must not lead us to forget the essential activity of standardization. Through the CCITT [International Consultative Committee on Telephone and Telegraph] and the CCIR [Interregional Consultative Committee on Radiotelegraph] we provide the technical bases, not only for handling traffic between countries, but also and above all, for ensuring compatibility between the equipment used, so that a variety of suppliers can compete. If we want--and we certainly do--to enable all the nations of the world to control their own technical and technological decisions, it is clear that we must start through this work of standardization within the ITU. So it is quite understandable that the question of the share to be allocated to technical cooperation in the ITU's budget may be a problem, for it must not be allowed to cause cutbacks in the Union's traditional activities." Then Mr Mexandeau invited the conference to hold its 1987 meeting in Paris.

During the press conference he held in Nairobi, Mr Mexandeau returned to the issue of cooperation in telecommunications. He spoke in favor of a true technology transfer and as an example, cited the contract signed between India and France for the order of "E-10" exchanges, which include a technology transfer and the construction of a manufacturing plant in India. He again gave his support to multilateral cooperation within the ITU and also to bilateral cooperation programs.

Then, in response to an African journalist who remarked that French telecommunications aid is more accessible to French-speaking than to English-speaking countries, Mr Mexandeau said that "because of these historic ties, France first

concentrated its efforts on its former colonies. We are going to continue to help the French-speaking countries, but there will also be something new: our cooperation is now being offered to all countries." He again mentioned the agreement with India, as an example of this new orientation.

7679

CSO: 5500/2521

FRANCE

TELECOMMUNICATIONS CHIEF TALKS AT FIBER OPTICS MEETING

Paris ZERO UN INFORMATIQUE HEBDO in French 4 Oct 82 p 30

[Article by Daniel Mansion]

[Excerpts] The eighth European Conference on Optical Communications (ECOC 82) was held in Cannes from 21 to 24 September 1982 in the new Palace of Festivals. This conference was organized by the SEER [Society of Electrical, Electronic, and Radio Engineers] and by the GIEL [Electronic Industries Group]. The conference attracted over 800 participants, including 500 foreigners representing 28 countries.

ECOC is the biggest conference in the world on research and industrial development in the use of optical fibers for communications. This topic is of direct interest to data specialists because of the very high baud rates possible (560 Mbps [million bits per second]).

The conference was opened by Jacques Dondoux, the director general of telecommunications. Just the day before he had attended the launch of a cable-laying ship equipped to lay three types of cable: energy cables, copper telecommunications cables, and optical fiber cables.

Mr Dondoux remarked that on 15 September 1982, the "Ampere," the cable-laying ship which belongs to the PTT [Postal and Telecommunications Service], laid the first underwater optical cable without repeaters, from Cagnes-sur-Mer to Juan-les-Pins, making a loop 20 km offshore in order to find a seabed over 1,000 meters in depth.

The cable operates on a wavelength of 1300 nautical miles. Four of its six optical fibers are multimode fibers and are used to handle two bidirectional digital links, at a baud rate of 34 Mbps. The other two monomode fibers operate at a higher rate--280 Mbps.

Fournisseurs 1		2	3 Noms	4 Fibres optiques	5 Câbles optiques	6 Composants	7 Systèmes de liaisons	8 Appareils de mesure	9 Recherche fondamentale	10 Machine à fabr. fibres	11 Nous avons remarqué
TCSF	Cabeltel										
CGE	Câbles de Lyon			•							
CGE	Labo Marcoussis										
12 CGE	13 CIT-Alcatel				•						
CGE	CLTO			•							
	CNET 14			•							
Schl.	Cordons & Equip.			•							
G 3 S	Enertec			•							
TCSF	Europtronique			•							
	F.O.I.			•							
	Foptica			•							
	Fort			•							
Instrum.	Jobin-Yvon			•							
TCSF	LTT 15			•							
Philips	Radiall			•							
G 3 S	RTC 16			•							
	SAT 17			•							
G 3 S	SEMY			•							
	Silec			•							
TCSF	Socapex 18			•							
	Souriau			•							
TCSF	Labo Corbeville 19			•							

Key:

1. Suppliers
2. Groups
3. Names
4. Optical fibers
5. Optical cables
6. Components
7. Communications systems
8. Measurement equipment
9. Basic research
10. Fiber manufacturing machinery
11. Of special interest
12. General Electric Company
13. Marcoussis Laboratory
14. National Center for Telecommunications Studies
15. Telephone and Telegraph Line Company
16. Compelec Radio Technique
17. Telecommunications Corporation
18. Professional Electrical Connectors Company
19. Corbeville Laboratory

20. Experimental link at 560 Mb/s, 2 km in length, monomode 0.3  $\mu$ m.
21. 34 Mbs terminals, Cagnes/Juan-les-Pins
22. First underwater delivery
23. Bandwidth, echo measurement, backscattering.
24. Photodiodes for 1.3  $\mu$ m.
25. Underwater cables
26. Optical multiplexer
27. Monomode link, 140 Mbs, 25 km in length
28. PFO Optoball high performance connector
29. Collimated lasers. 57-page catalogue.
30. Digital coding for color television.

In 1983, an underwater cable 80 kilometers in length, with two repeaters, will be laid between Antibes and Port-Grimaud, and in 1985, commercial service will begin between La Seyne and Corsica.

Nor has land service been overlooked. In 1982 the PTT ordered 5,000 kilometers of optical cables. On the subject of the Biarritz experiment, the delay of several months over the original schedule was caused by the definition of the users' terminals.

#### Cables in France

At present, the manufacturers are delivering 30,000 "Minitel" terminals a month. They cost the PTT 1,100 francs each, and the PTT then rents them for 70 francs per month. Mr Dondoux said he hopes there will be no more than two suppliers for the electronic part of the equipment, as this would help to hold production costs down. However, the units are available in different colors and styles, like telephones, to meet the customers' tastes.

The PTT minister's report on this subject can not be released until it is submitted to the president, which will be in a few weeks. The prime objective of this cabling program, as of the Biarritz experiment, the prototype for the national program, is to help develop our optical cable accessories and components industry. While this urban cabling using optical fibers is slightly more expensive than when coaxial cables are used, the PTT may consider making up the difference in cost to the municipalities. This inducement should stimulate the development of cable television, which has been stagnating.

Mr Dondoux called for unity between government services and manufacturers in order to install optical fiber cables throughout the country. He commented that cabling cities can only be of interest to countries with a high standard of living. Such advanced technology can hardly be exported to the developing countries.

In 1986, there will be direct television broadcast satellites. They will broadcast five or six channels. The programs have not yet been selected. By 1990 we will have 10 channels on one or two French satellites, not to mention foreign satellites. In order to receive these broadcasts, collective antennas will have to be installed on buildings; this will represent a considerable market.

Another promising market is for mobile transmitter-receiver communications systems. There have been over 100,000 requests for permits, because of the longer distances traveled between home and work.

Telephone and computer communications services will be used in 95 percent of French households.

More and more, a need is being felt for a second telephone line, especially when the Videotex system is used. The PTT deliberately made their estimates on the basis of a single line per household, in order to be able to use optical fibers for the second line, for they can handle broader pass bands.

Mr Dondoux mentioned the budget, and said he would rather delay the renovation of old telephone exchanges in order to use the funds allocated for them to develop computer communications.

7679

CSO: 5500/2521

SINTRA ALCATEL TAKES LOAN, REVEALING INVESTMENTS, ACTIVITIES

Paris ELECTRONIQUE ACTUALITES in French 5 Nov 82 p 27

[Unsigned article: "Sintra Alcatel at a Turning Point"]

[Text] At times considered by the Bourse (French stock market) as a "little Matra," and at times as too highly valued, Sintra Alcatel either benefited or suffered from the mystery with which it surrounded itself. Very little was known about this subsidiary of the CGE (Compagnie Generale d'Electronique) group, by way of CGE and Cit-Alcatel.

It took the issuing of a loan consisting of obligations convertible into shares, for the company to lift the veil from such information as orders, investments, or sales structure.

A 120 Million Convertible Loan

This convertible loan was a success. It was extensively subscribed, and Cit-Alcatel covered only about one-sixth of the 120 million issue. Since the 240,000 convertible obligations of 500 francs each are exchangeable one-to-one against Sintra shares, and since 551,483 shares currently exist, it means that Cit-Alcatel's participation should drop from the present 69.9 percent to about 54 percent. But this adjustment will occur only in 1990, at the final due date of the convertible loan.

To understand the bonds between Sintra and its parent company, as well as the nature of its activities, it is appropriate to provide a little history. In 1978 and 1980, the company received a number of contributions from Cit-Alcatel and CGE. These were the submarine detection and electronics divisions of Cit, the latter division being involved in radio communications, graphic display systems, and remote measurements; Sintra thus became the pivot of CGE's military activities.

At the same time, the company dropped its department of management data-processing peripherals, which was given to Transac, a business of the CGE group in which Sintra now holds about 23 percent of the capital. Sintra had also received a 51 percent participation in Compagnie Generale d'Automatisme

(CGA). But CGA very recently moved to the United States, resulting in money requirements that were met by increases in the capital supplied by the CGE group, to which Sintra did not subscribe: its share in CGA consequently dropped to 36 percent.

#### Subsidiary of the Cit-Alcatel Group

It should also be pointed out that in 1977, the CGE group took control of Sintra through purchases on the Bourse, and by a public offering of exchange against Cit-Alcatel shares. Up to then, the capital was held by the founders, the public, and Banque Vernes, the latter of which still indirectly holds 5.4 percent of the shares.

The sales and orders of Sintra Alcatel are distributed among the following activities:

In 1981, military systems for data processing and display accounted for 29.4 percent of the turnover and 37.9 percent of the orders;

Submarine detection represented 19.3 percent of billing and 31 percent of the costs;

Telecommunications and industrial controls amounted to 44.3 percent and 27.6 percent, respectively;

Microelectronics contributed 5 percent of sales and 3.5 percent of orders;

And lastly, 2 percent of the 1981 turnover was composed of carryovers from terminated activities. .

#### Activity Oriented Toward Weapons

The customers of Sintra Alcatel consist of: 53 percent national defense, 13 percent civilian administrations, 25 percent private sector, and 9 percent exportations. Military activities are thus in the majority and are tending to increase, as shown by an examination of the company's orders, in which submarine detection and military systems are playing a growing role.

Here are a few examples to better define the activity of each Sintra Alcatel department.

In military systems, information must be processed to directly operate weapons or to assist in decisions. That is how Sintra has built France's air defense network, Strida.

In submarine detection, the design and construction of weapons systems heavily depend on the mastery of submarine acoustics technology. One-half of these products are exported.

Telecommunications and industrial controls include the linking of all subscribers to a network, whether stationary or mobile, such as Lirsac (integrated radio-telephone linkage with automatic channel selection), the military program Rita (integrated automatic communications network), electronic telex screen terminals (Sintra is studying the future terminals for the PTT teletex), as well as industrial remote control systems (for nuclear power plants), and black and white or color display systems (whose major uses are computer-aided design, or image processing for weather or earth resources studies).

#### Microelectronics Specialist

Sintra Alcatel's microelectronics is oriented primarily toward thin film hybrid microelectronics, with modules designed to be used under very adverse conditions (weapons, aerospace), having received RAQI certification from the industrial control service for weapons.

The technologic level achieved by Sintra's microelectronics department allows it to be used as support for new developments such as flat-screen research. It represents an important potential for the company, both through its sales possibilities, and through the support that it can provide to other departments of the enterprise.

#### 20-25 Percent of Turnover for Research

The research policy is an important element of Sintra Alcatel's strategy. The total expenses in this area absorb 20-25 percent of the turnover, and the portion fully supported by the company represents 5-6 percent of this same turnover, namely a good 50 million francs in 1981. The remainder are study contracts or internal studies partially financed by public agencies.

Sintra employs nearly 600 people in research, split evenly between technicians and engineers. A close cooperation is obviously maintained with CGE's other laboratories and research organizations.

The company indicates the directions of its research effort. Flat screens is one of these orientations; the work is conducted along two paths: liquid crystal screens being studied for the AEC, and electroluminescent screens, developed in cooperation with the Finnish company Lohja.

Another important orientation is the work being carried out on ceramics and transducers for submarine warfare. And a last direction is signal and information processing, as well as the management of large data bases, which has already led to concrete applications in the area of information retrieval by telephone.

#### One Billion in Billing

Comparisons of financial results over a long period of time have no significance because of the intervening structural changes that have taken place. Last year, turnover increased by one-third, with 822 million. It

should increase again this year, and hover around one billion francs. The increased number of orders should lead to a continued expansion: from 1320 million at the end of 1980, these orders have grown to 1787 million at the end of 1981, and should reach 2 billion by the end of the current fiscal year if the circumstances remain favorable.

Profits did not keep up with this expansion. In 1981, operating profits stagnated around 32 million, and net earnings were slightly over 17 million, at a margin barely higher than 2 percent.

Despite this, income surpluses above expenses had followed the billing curve with more than 95 million against less than 70 million in 1980. But financial costs increased heavily, from 18.3 million to 41.3 million. This is thus one more company which pays its bankers an amount of money amounting to more than twice its net profit. An increase in depreciation (27.7 million against 16 million), which is healthier for reflecting the investment effort, has also helped reduce the declared profit.

#### Weight of Financial Costs

It should however be pointed out that the soaring financial costs result in large measure from preparations for the future. Sintra works in industries with long manufacturing processes. Future increases in turnover require first of all a growth in stocks and works in progress. All of which must be financed at a particularly high cost in these days of expensive interest rates.

This effort could have been endured if the profitability of the business had not been sapped by the cost of a fifth vacation week, a one-hour reduction in the work day, a rise in the dollar which raises the cost of some supplies, and this year, by price freezes and a one percent increase in TVA (added-value tax), whose load is supported by the enterprises. As last year, the 1982 results should therefore show a stagnation.

In the future, due to its standing in France, to a determined exportation policy, and to a good record of orders, Sintra Alcatel stands a chance to see a good expansion, and to improve its profitability. The 1981-1982 period then appears as a transition period.

The end product of the convertible obligation issue should allow the company to boost its operating fund, resulting in a relative reduction of financial costs. Sintra will also have to garner investment means. Including the sums--minimal ones, actually--devoted to participations, investments have represented 16 million in 1979, nearly 50 million in 1980, and 30 million in 1981. The microelectronics production center of Marcq in Baroeul, cost 25 million by itself.

### Choppy History on the Bourse

Sintra's rather favorable prospects after years devoted to preparing for the future, together with the secrecy which surrounded the business, explain the ups and downs of its history on the Bourse. Sintra shares, starting at below 300 in 1978, reached 870 in 1980, before falling back down to 317 following the elections of May 1981. Since then, their value has followed a sawtooth curve which has now brought them back to more than 500, a value at which--if maintained--the subscribers to the convertible obligations would already be making a profit.

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TELEPHONE ORGANIZATION PROBLEM INVOLVES THOMSON, CGCT, ALCATEL

Paris ELECTRONIQUE ACTUALITES in French 5 Nov 82 pp 1, 12

[Article by D. Levy]

[Text] The nationalization of CGCT (General Company for Telephone Construction) and the reluctance of Mr Gomez, president of Thomson, to continue its public telephone switching activity, once more create a restructuring problem for the French telecommunications industry.

Fundamentally, PTT is sticking to the principle of two major suppliers of public telephone exchanges while realistically welcoming the idea of a CIT/Thomson association for the development of the next generation of exchanges. The Ministry of Research and Industry seems to have now accepted this PTT viewpoint, after having temporarily leaned toward an immediate regrouping of the public telephone switching activities of the two nationalized companies. But who will be the second supplier along with CIT-Alcatel?

There is little use in feeling sorry for CGCT, considered only a few years ago as one of the glories of our telecommunications industry. Had it not perfected two remarkable telephone systems, and did it not claim the title of foremost French exporter of exchanges? To be sure, the company was functioning as part of the ITT group and benefited from all its logistics; but in practice, it used this strong support only for exportation.

It would be futile to seek the causes for CGCT's decline. Lack of imagination or daring on the part of its leaders in an indispensable diversification policy? Paralyzing centralized direction from an administration that qualified as "employment blackmail" the true questions raised by technologic change? Attraction-repulsion phenomenon for an enterprise whose technical opinions often clashed with those of the administration? In fact, it is on one hand the sudden swerve of DGT (General Directorate for Telecommunications) toward time-switching in 1978, and on the other hand the political wish to remove ITT from the strategic area of telecommunications, which have locked CGCT within its present structure, without recourse (the adoption of System 12 could have been justified only by the failure of one of the two French time-switching systems).

## First Remedies for CGCT

As we had indicated, the nomination of Mr Lestrade to the CGCT presidency was to have been only temporary (see ELECTRONIQUE ACTUALITES, 15 and 22 October). The former telecommunications director for Ile-de-France undertook as his main task to obtain from the inside a real inventory of the company, and to evaluate its actual potential, so as to open new directions for the company's reorientation.

In a report just delivered to Messrs Chevenement and Mexandeau, Mr Lestrade is already indicating the first desirable measures for purging the company and restoring its credibility. In particular, he feels that CGCT must know very soon, "in the next few weeks," which of the time-switching systems--E-10 or MT--it will be authorized to manufacture; that the company's financial situation must be restored (one billion needed within three months and another billion in three years, to assure expansion and coverage of deficits); that a positive balance of orders must be re-established (by receiving 1.5 billion in orders from PTT in the next six months); and that CGCT must become involved once more in the electronics field (new products, notably in teletex and videotex for CGCT, and in teledistribution installations for La Signalisation).

Other measures leading to a new strategy for the enterprise will be formulated within three months by Mr Lestrade and his successor (the name of Mr Magnin, former director for public telephone activities at Le Materiel Telephonique (LMT), is being mentioned).

## Seeking the Second Source

Whatever happens, it will not be possible to separate the future of CGCT from that of the other two suppliers of exchanges, CIT-Alcatel and Thomson-CSF. As it stands, neither of them is in a position to withstand an automatic absorption of 3500 to 4000 employees from CGCT's public telephone switching department (we can consider that the rest of the enterprise, namely 2000 persons in the private telephones division, has a sufficient work load, if only its line of equipment were to be updated).

CIT-Alcatel has just reached an agreement to reduce its work hours in order to absorb part of its overstaffing in switching, estimated at 1650 people (see ELECTRONIQUE ACTUALITES of 29 October). But if this measure makes it possible to strengthen the competitiveness of the enterprise through optimum utilization of production resources, the manufacturer knows very well that the measure is not sufficient, and that it will have to find other solutions to salvage about one thousand jobs that are still threatened. The lower volume of PTT orders can be compensated on foreign markets only with difficulty, despite annual contracts adding up to nearly 2 billion, and record orders such as the one from India (3 billion). Not to mention CIT-Alcatel's prodigious productivity gains (the company currently makes three E-10 exchanges per week!).

The reassignment by decree, of 3500-4000 people from CGCT--even with its 15 percent PTT market--risks spraining a mechanism that has been perfected with difficulty, and that is precariously balancing its results.

Thomson-CSF cannot do the same, and the public telephone switching department of the group will announce for the second consecutive year, losses that will probably persist into next year to reach one billion francs over three years. In fact, Mr Gomez was ready to drop this activity (2.5 billion in business expected for this year) in favor of an extensive merger with CIT-Alcatel, to form Telephone de France. This is a project which PTT has fortunately strongly opposed. At the same time, the president of Thomson was asked to reconsider the future of its public telephone switching activities, not for the short term, but as part of a synergy with the group's other activities.

Nevertheless, Thomson--which has already made considerable efforts in the very expensive restructuring of LMT and STE into Thomson-CSF Telephone, and in the development of the MT-20, estimated at 2 billion--cannot be asked to pursue an activity against its will. And yet, the opinion of industrial specialists is that this activity could rapidly become profitable again, as long as the company follows a dynamic exportation policy, now that all the technical problems have been solved for the product line.

Two possibilities are being considered should Thomson prove reticent. The first consists in the production of exchanges "coordinated" with the needs of PTT." In other words, the activity of the group would become that of a production shop for PTT. The second possibility would lead to the formation of a company combining the public telephone switching of Thomson and CGCT, with the contribution of CII-HB, under Thomson's wing. In both cases, PTT would have a second source along with CIT-Alcatel. However, there are those at the ministry who do not conceal their preference for a European alliance. And we have noted that Mr Delors, minister of economy and finance, reopened the subject of an industrial cooperation in information technologies, at the penultimate French-German summit meeting. But that is another story.

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TRANSPAC NETWORK DOUBLES IN SIZE; NEW 1983 SERVICES PLANNED

Paris ELECTRONIQUE ACTUALITES in French 5 Nov 82 p 14

[Unsigned article]

[Text] The Transpac network has nearly doubled its size in one year, and currently has more than 8000 connections in service (more than 7000 direct-access, with additional telephone network and telex accesses). In addition, subscriber traffic is growing significantly.

In order to face this strong growth in demand, Transpac is accelerating the rate at which it is expanding its capacity. Three new switches are being installed, on one hand to double the capacity of Paris switches (Paris-Archives and Paris-Beaupin), and on the other to open a new location in Nice. The network linkage is considerably reinforced by the creation of new internal connections.

At the same time, Transpac is opening new services and new access capabilities. For instance, 1200 bits/s access through the switched telephone network was progressively placed in service during the entire first half of 1982, and this new service is now accessible from all points in the country.

In addition, the 1983 opening of X 25 access to Transpac at 2400 and 4800 bits/s through the switched telephone network, was just announced. This new service will meet specific application needs, such as: perfecting the X 25 interface by its manufacturers, using the telephone network; portable or low utilization terminals; demonstrations by custom remote-processing companies; demonstrations during conferences, seminars, fairs, exhibits, and so on; and assistance for specialized connections for Transpac access.

Finally, as part of the professional Teletel service, videotex access points make it possible to connect those who provide services, through the telephone network. Access points are open in Paris, Marseille, Lyon, and ten other large cities.

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SAT GAINS CAPITAL, INCREASES RESEARCH, NEW PRODUCT DEVELOPMENT

Paris ELECTRONIQUE ACTUALITES in French 5 Nov 82 p 26

[Unsigned article]

[Text] SAT (Telecommunications Company) of the G3S group has achieved a capital growth which will bring in 50 million francs. The company is thus providing a financial basis for the asset expansion that it has been pursuing in recent years.

Since 1980, SAT has spent more than 90 million to acquire a share in Tonna Electronique of Reims, as well as in Interconnect Planning Corp and General Optronics of the United States. On the other hand, SAT's increased interest in Silec (Industrial Company for Electronic Connections) up to a little more than 50 percent, was paid mainly through the issue of new shares in the company.

Henceforth, SAT has a much stronger position in all its areas of activity, and is in a position to prepare the technical revolutions that are beginning.

In cable technology, control of Silec gives the company a new dimension, and will ease the transition to fiber optics.

In aeronautics and space technologies, General Optronics brings its competence in semiconductor diode lasers and their applications. The company can thus bolster its infrared optronics specialization, with its many and promising military applications.

In telecommunications, teledistribution, and telematics, SAT will benefit from the support of Interconnect Planning to distribute its equipment in the United States; this American company is a preferred supplier of telephone exchanges to Wall Street financial institutions. SAT is also placing large expectations in audiovisual cable networks: Tonna Electronique could also help it become active in the mass market.

SAT is intensifying its research efforts and launching new products in all areas. It thus appears to successfully compensate for the reduction in PTT orders for conventional equipment. Most of its activities concern weapons and telecommunications, which presently offer the best growth prospects.

SAT's financial results are beginning to reflect the first fruits of the company's efforts. The operating profits, which had dropped from 74 million in 1979, to 38 million in 1980, were back up to 59 million last year, despite heavier costs. In 1982, the parent company should obtain results of the same magnitude as those of last year.

But the entry of Silec into the group will likely increase the absolute value of the consolidated profits in terms of value per share. Many financial analysts believe that given the good conditions under which control of Silec was obtained, this profit per share stands a chance of exceeding 40 francs, or more than 50 million, instead of some 30 francs.

SAT thus seems to be rising out of the slump. But it has not yet found on the French stock market the growth stock status that it had earned until the end of the 1970's, at the time of the development of the telephone in France.

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FRANCE

BRIEFS

PTT VIDEOCOMMUNICATION PROJECT--Between now and the end of 1986, the PTT [Postal and Telecommunications Service] plans to offer 1.5 million French households access to videocommunication services, it was reported at the PTT ministry on Saturday. However, this project is still subject to budget allocations, and is only one aspect of the report on cable videocommunication networks which will be submitted to the prime minister on 15 October. These networks, which use optical fibers which have been tested with success at Biarritz for several years, can transmit either sound, images, or data. Just like the telephone, they are interactive, which means that pulses can travel in both directions. This will mean opening up each household to direct cable television service, which will be able to receive the programs broadcast by satellites at the end of the decade under the best possible conditions. It will also provide access to data banks, to information systems of the Velizy type, and to the entire range of telephone services: video-conference, telecopy services, etc. The PTT would like to begin this ambitious project in 1983 by equipping 100,000 households, then 300,000 the following year, and over a million in 1985, with the goal being cable connections for over half of France in 1995. [Text] [Paris LES ECHOS in French 4 Oct 82 p 7] 7679

CGE'S INDONESIAN TELEPHONE LINK--After the close of the international call for bids issued in November 1981, two companies belonging to the CGE [General Electric Company] group, Cables de Lyon and CIT Alcatel, working together in the joint division, SUBMARCOM, have been chosen to develop the submarine telephone link between Medan, Indonesia, and Singapore. Also responding to this call for bids were the NEC of Japan and STC of the United Kingdom. The contract is for 220 million francs. The system selected is the S12 designed by CIT Alcatel in association with Cables de Lyon. The submarine cable will be laid in 1984. This is the first section of a cable now under study which would connect Europe and Asia via the Red Sea and the Indian Ocean. [Text] [Paris LES ECHOS in French 18 Oct 82 p 9] 7679

CIT ALCATEL'S PRODUCTION EQUIPMENT--CIT Alcatel plans to discontinue production of some of its equipment, including the K6 wiring machine and its component insertion machine, but the company's equipment department will continue to produce machinery intended for inhouse use, such as wiring equipment and testers. This equipment is used to produce equipment for "ready for use" plants. This decision, which was apparently made at top levels of the CGE [General Electric Company], is allegedly caused by an imperative of a commercial nature: the company does not have an adequate commercial structure to handle the marketing of all its equipment. Before the end of 1982, the situation should be clear, and the discontinued products should have been transferred to a number of PMI [Small and Medium Industries]. A number of such companies are reported to be interested. ITS [Expansion unknown] might take over from CIT Alcatel its representation of the laser resistance adjustment equipment for the U.S. firm, Chicago Laser Systems. The other equipment--the K6 machine and the component insertion equipment--will be manufactured by other companies. The firms chosen should be announced quite soon. The companies under consideration have excellent qualifications for handling the development of this type of equipment. Their experience ranges from the production and improvement of component insertion machines to the development of software for their control. [Text] [Paris ELECTRONIQUE ACTUALITES in French 15 Oct 82 pp 1, 15] 7679

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PLANNING CONTINUES FOR CONNECTION WITH EURONET-DIANE SYSTEM

Athens OIKONOMIKOS TAKHYDROMOS in Greek No 40, 7 Oct 82 p 20

[Article by A. Papandropoulos]

[Text] "According to statements made by the premier, soon our country should be establishing the prerequisites for being able to closely follow technological developments. Within this framework, both the Ministry of Research and Technology and the appropriate services of the OTE [Greek Telecommunications Organization] are taking suitable actions to expedite the linking up of the country to the European network EURONET-DIANE. We hope that all this preparatory work will have been finished in the next 2 or 3 months, so that within the first 3 months of 1983 at the latest this link-up will be a fact." This was stated to us by Minister of Research and Technology G. Lianis, who added that with the help of financing from the United Nations, Greece is forming a prototype data bank, whose objective will be precisely its use as a foundation for the furthering of technological research.

In addition, G. Lianis stressed to us that very soon joint Greek-French investments will be realized in the sector of research and technology, and also the mixed enterprises appropriate to this purpose will be created. "The desire of Premier Andreas Papandreou is to push forward on the processes for the acquisition of technology, and from this point of view the protocol on cooperation with France which was signed during the stay in Greece of French Minister of Industry and Technology Chevenement is definitely a positive step," Professor Lianis stressed to us.

The EURONET Community System

"In the face of the headlong 'invasion' of electronic computers into all levels of social and economic life," we wrote earlier in the pages of the OIKONOMIKOS, the European Community has tried to keep up with events by creating a European network for the transmission of knowledge and information which bears the name EURONET-DIANE.

This is a system which, although still incomplete with respect to the amount of its "stored" information, provides the opportunity to its subscribers, in whatever area of the EEC they are located, to obtain the information which they seek simply by picking up the receiver of their telephone. And this at a unit price of an ordinary phone call.

The entire system is connected to "terminal" stations (that is, to subsidiary data banks) which are installed in various European cities (Brussels, Copenhagen, Dublin, Luxembourg, Rome, and so forth) and which serve the interested parties which are hooked up to these.

Thus, a subscriber to EURONET-DIANE in London needs only to pick up his phone receiver to obtain information on any matter concerned with scientific, technical, economic, or other activities. This system transmits the given query by way of a telecommunications junction which relays it to "receivers" which are hooked up either to the memories of computers or to national "information banks."

The former provide only brief statements on the sources from which the information can be obtained, while the "banks" give the information proper. This network also offers a very broad selection of articles, books, lectures, and studies connected with the topic inquired about (with dates, titles, addresses), with these applying to aerospace, agriculture, veterinary medicine, to all branches of mechanics, electronics, medicine, biology, ecology, chemistry, nuclear physics, and so forth.

On the other hand, substantial efforts are being made in Brussels to enhance the EURONET-DIANE system with specialized business and stock-exchange information, which the business world of the EEC will have direct access to at an insignificant cost. Based on what was said to us by Community leaders, the price for this information is exceptionally low--something which undoubtedly will facilitate access for small and medium-sized businesses to sources of information which have been inaccessible up to now.

At this point it should be emphasized that a large data bank is in operation also at the EOMMEX [Organization of Private Means of Transportation], but this is not very well known to the broad public.

Therefore, from the preceding it becomes obvious that the decision of the government on being linked up to the European system EURONET constitutes an entirely positive action--an action which we had recommended and proposed in these very pages precisely 26 months ago.

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FOREIGN FIRMS SEEK SHARE IN DIGITAL EXCHANGE CONTRACT

Oslo AFTENPOSTEN in Norwegian 19 Nov 82 p 4

[Article by Knut Lovstuhagen]

[Text] Kongsberg Vapenfabrikk has reached an agreement with the big Japanese concern Nippon Electric Company (NEC) and the French CIT-Alcatel to assist them in preparing the industrial package part of bids submitted on digital telephone exchanges amounting to around a half billion kroner to the Telecommunications Agency. If one of the two gets the contract, Kongsberg will also try to assist that company to set up a production cooperation with either Elektrisk Bureau or Standard Telephone and Cable. Kongsberg Vapenfabrikk is not interested in taking on the entire coproduction job, but it would like to produce the computer electronic part of the digital telephone exchanges.

By 30 December five firms will have submitted bids on digital telephone exchanges that would expand the telecommunications network in this country. These are the traditional Telecommunications Agency contractors, Elektrisk Bureau and Standard Telephone and Cable, the Canadian Northern Telecom, NEC and CIT-Alcatel. This is the first time the Telecommunications Agency has asked for international bids on heavy telecommunications equipment, following a government resolution. Seven firms originally indicated interest in participating in the competition for this big order, but both Siemens and Philips have withdrawn. The government has made it a condition that if the contract goes to a foreign company, that company will establish industrial activities in Norway of the same size as would have been the case if one of the traditional contractors had been awarded the contract.

For a number of years Northern Telecom has worked closely with the Oslo firm of Gustav A. Ring and would be able to utilize this resource to build up the necessary production apparatus in Norway if it is awarded the contract. This is an advantage neither NEC nor CIT-Alcatel has and it would be difficult for them to establish on their own the apparatus needed within the strict time limits involved. Both have made overtures to EB [Elektrisk Bureau] and STK [Standard Telephone and Cable] to discuss possible forms of cooperation, but so far without success. EB and STK are quite confident that they will be able to land the big order themselves.

"If it turns out that the contract goes to NEC or CIT-Alcatel, we will try on behalf of the firm selected to set up a cooperation with EB or STK so that the resources released in this country can be used for the production of the digital telephone exchanges," said firm development chief Olav Berdal of Kongsberg Vapenfabrikk in a statement to AFTENPOSTEN.

Isn't Kongsberg itself interested in this job?

"We are a computer firm and have no desire to become a new telecommunications firm. But we would like to produce the computer electronic part of the telephone exchanges."

Norsk Data is also within the sphere of interest of the Japanese and French firms in this context. But according to what AFTENPOSTEN has learned, Norsk Data has big reservations about entering into cooperation if it is just a question of licensed production. The starting point for cooperation would have to be a transfer of technology.

The order the Telecommunications Agency has requested bids on covers digital exchange equipment for 500,000 subscribers. The plan is that in the fall of 1983, Storting will authorize the department to order the equipment from one of the five potential suppliers. The contract will probably amount to around 500 million kroner. The plan is that the two first exchanges will be put into operation during the summer of 1986.

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SWEDEN

BRIEFS

TELEDATA FIRM FORMED--A newly formed company, Swedish Telepicture Co. will begin operating with so-called teledata. The intent is mainly to offer commerce and industry information from various sources. Around the first of next month the Telecommunications Agency will open the Datavision communications network to such teledata activity. Part-owner of the new Telepicture Co. will be Teleinvest, the Programator Group of the Ericsson concern, SVENSKA DAGBLADET Co. and Goran Asplund Co. Text Stockholm DAGENS NYHETER in Swedish 30 Sep 82 p 8  
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CSO: 5500/2539

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